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J. C. Trautman, Jr.
Dec. 31, 1913.

628

Interlocking Channel
Bar Company

L. P. FRIESTEDT,
Proprietor

ADDRESS:

1412 Tribune Building,
Chicago, Ill.

INTERLOCKING CHANNEL BARS

FOR

COFFER-DAMS,
BRIDGE FOUNDATIONS,
WATER-TIGHT BULK HEADS,
PILES AND CASINGS,
FOR BUILDING FOUNDATIONS,
CONSTRUCTION OF LOCKS,
FOUNDATIONS FOR LIGHT-HOUSES,
DRY DOCKS,
SINKING OF SHAFTS,
SHIELDS FOR TUNNELS,
BUILDING OF DEEP WATER CRIBS,
DEEP WATER EXCAVATIONS,
BUILDING OF DAMS,
WATER-TIGHT CASINGS IN DEEP WATER
FOR FOUNDATIONS OF ALL KINDS,

AND

DEEP EXCAVATIONS
OF ALL KINDS.

SPECIFICATION

Forming part of Letters Patent 707-837, dated August 26, 1902, allows the following claims:

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is— 80

1. A metal sheet-piling, comprising a series of beams having interlocking flanged edges and joined together in the relative alternating position shown, and presenting a single wall at all points, substantially as set forth. 85

2. A metal sheet-piling, comprising a series of channel-beams having engaging interlocking flanged edges, the joining faces of said flanges being beveled and which draw together with a wedging action as the beams are assembled in their alternating position in forming a structure presenting a single wall at all points, substantially as set forth. 90

3. A metal sheet-piling, composed of channel-beams joined edgewise and having the back and face sides thereof positioned alternately with reference to each other, and presenting a wall structure of a single thickness at all points, substantially as set forth. 95

4. A metal sheet-piling, composed of beam-sections assembled edgewise and presenting a single wall at all points, and means for locking said beams together, substantially as set forth. 100

5. In metal sheet-piling, the combination with a series of channel-beams positioned alternately and interlocked along their flanged edges in continuous order of succession, of an angle Z-bar joining and bracing the beam-sections, substantially as set forth. 105 110

6. In metal sheet-piling, the combination with a series of channel-beams joined together in a continuous unbroken sheet, by having the respective flanged edges interlock, of the double angle-bars, and the angle-plates positioned opposite to said bars and providing a space for the insertion of a packing substance, substantially as set forth. 115

In testimony whereof I affix my signature in presence of two witnesses.

LUTHER P. FRIESTEDT.

Witnesses:

L. M. FREEMAN.

L. B. COUPLAND.

121-10919-0604T

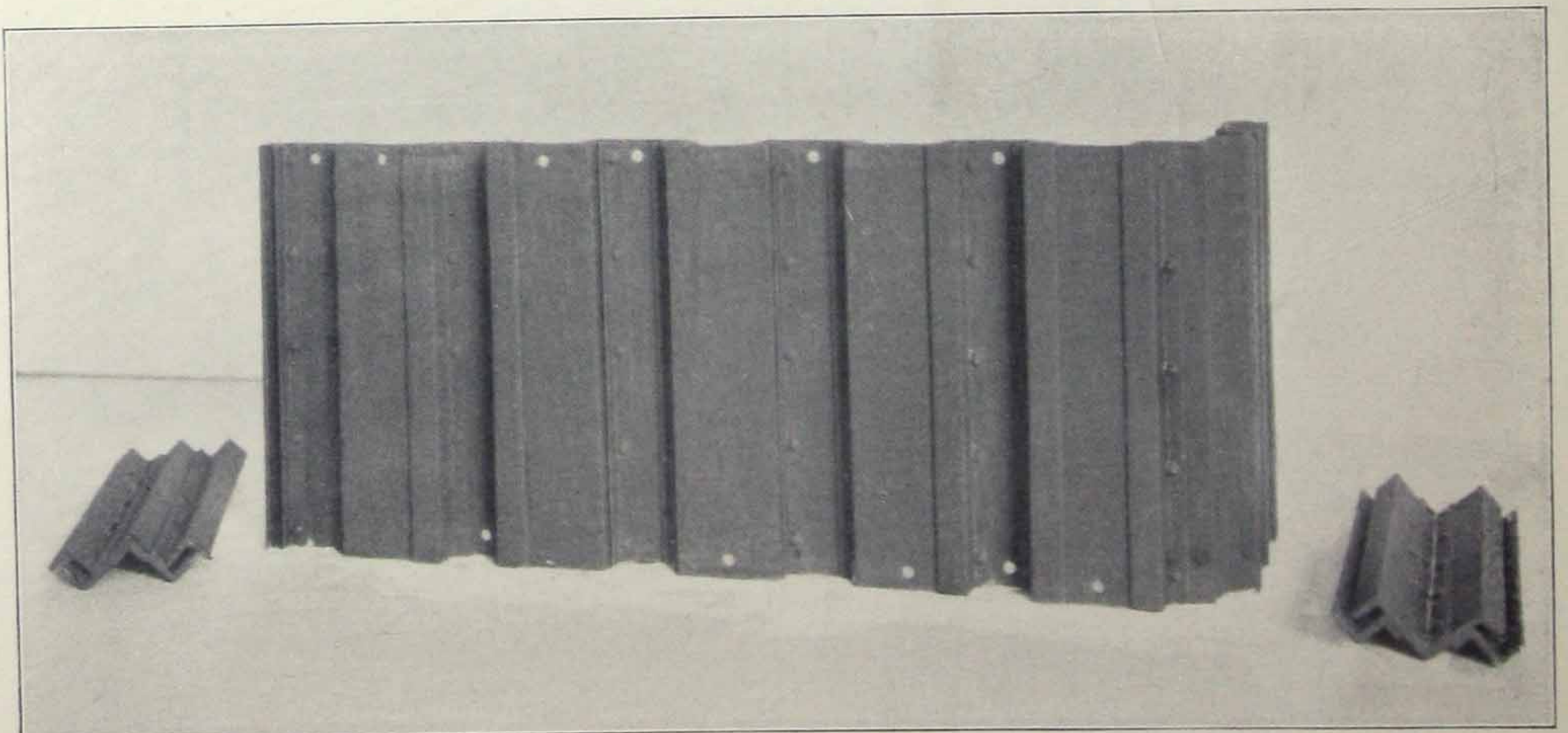
Interlocking Steel Piling

fills a long felt want among Contractors and Engineers. The building of coffer dams has heretofore been limited as to depth owing to the fact that it has not been practical to drive wooden sheeting to a depth of 40 or 50 feet, unless the soil was soft, easily penetrated and free of obstructions, such as coarse gravel, small boulders or other obstructions which would naturally obstruct the driving of wood.

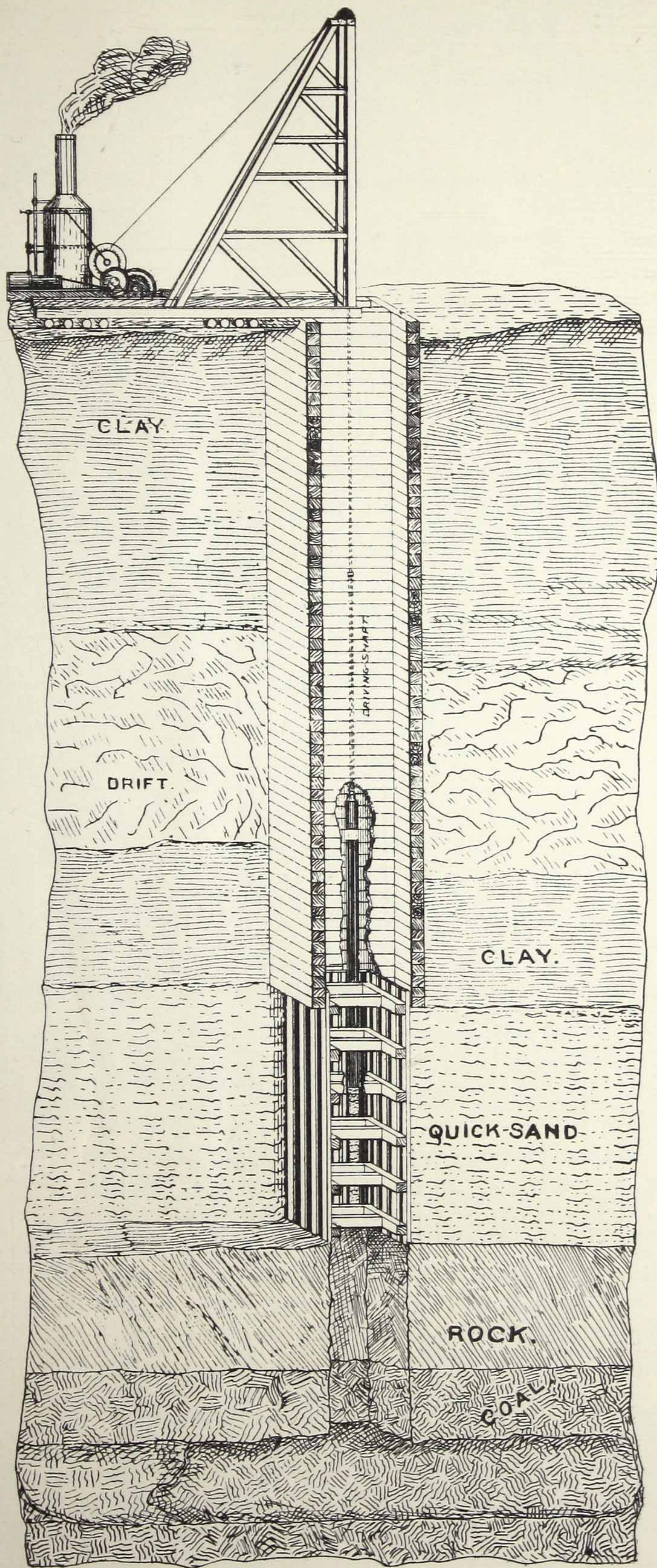
It is now possible with the help of the ***Interlocking Sheet Steel Piling*** to penetrate any depth or drive it through any soil obstructed with boulders, glacial drift, rip rap, quick sand, etc. with ease. It is not necessary to back fill this sheeting with earth in order that it may be made water tight, as the interlocking edges form a perfect sediment dam and thus obstruct the flow of water through the joints. Where the water is perfectly clear and free from sediment, angle packing strips are provided and calking can be driven into the seams or joints, so as to make the seams absolutely water tight.

This class of sheeting or piling can be pulled up and can be used over again any number of times, or if there is no further use for it, it can be sold for salvage at 50% on the market price. The old style of wooden sheeting is nearly always a total loss and in most cases it is abandoned as the salvage is no value.

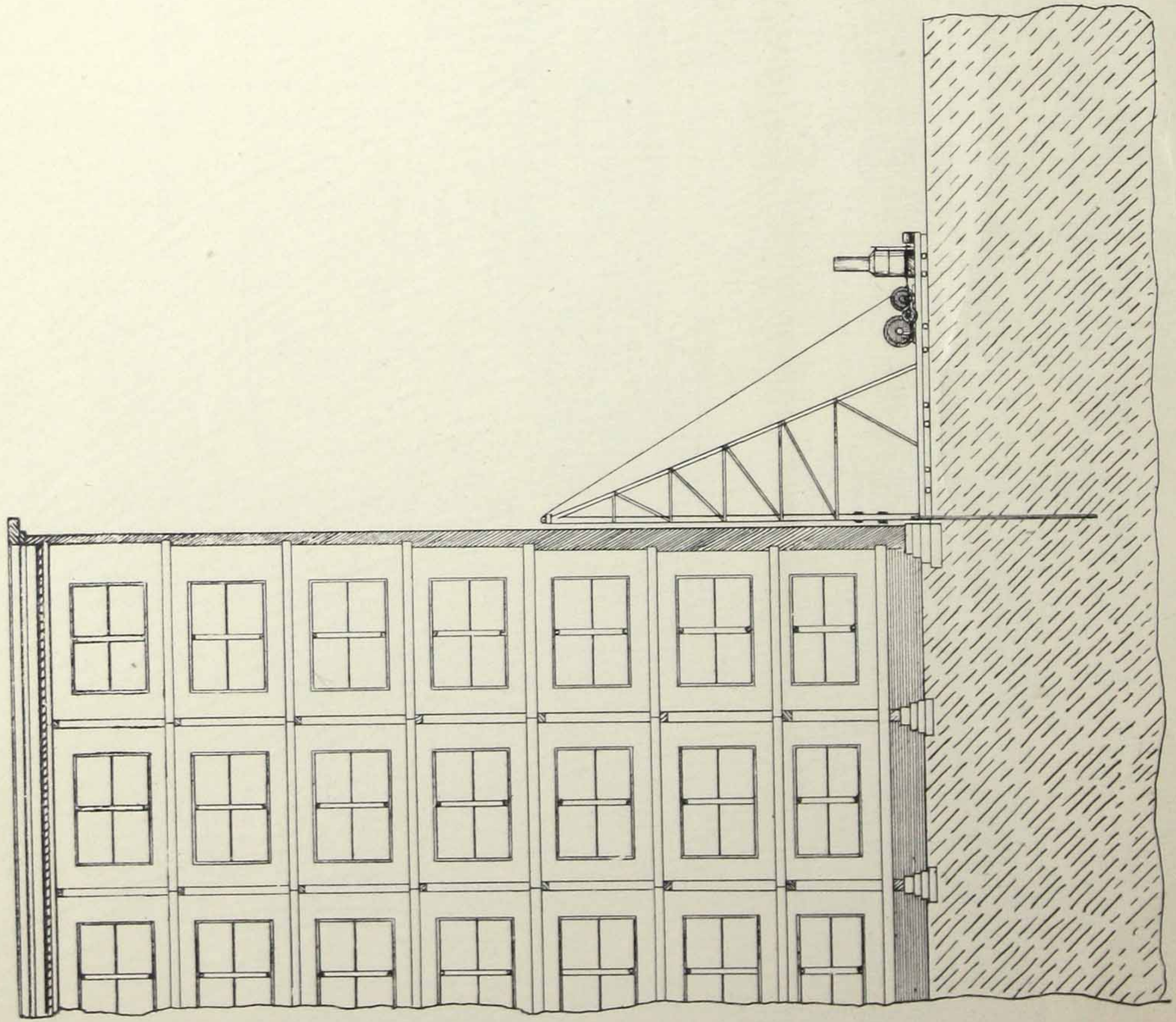
It is now possible, by the use of the ***Interlocking Steel Piling*** to construct coffer dams in swift flowing rivers as there is no back filling or earth necessary. There is not the danger of the earth filling or backing being washed away as is the case with the old style coffer dam.



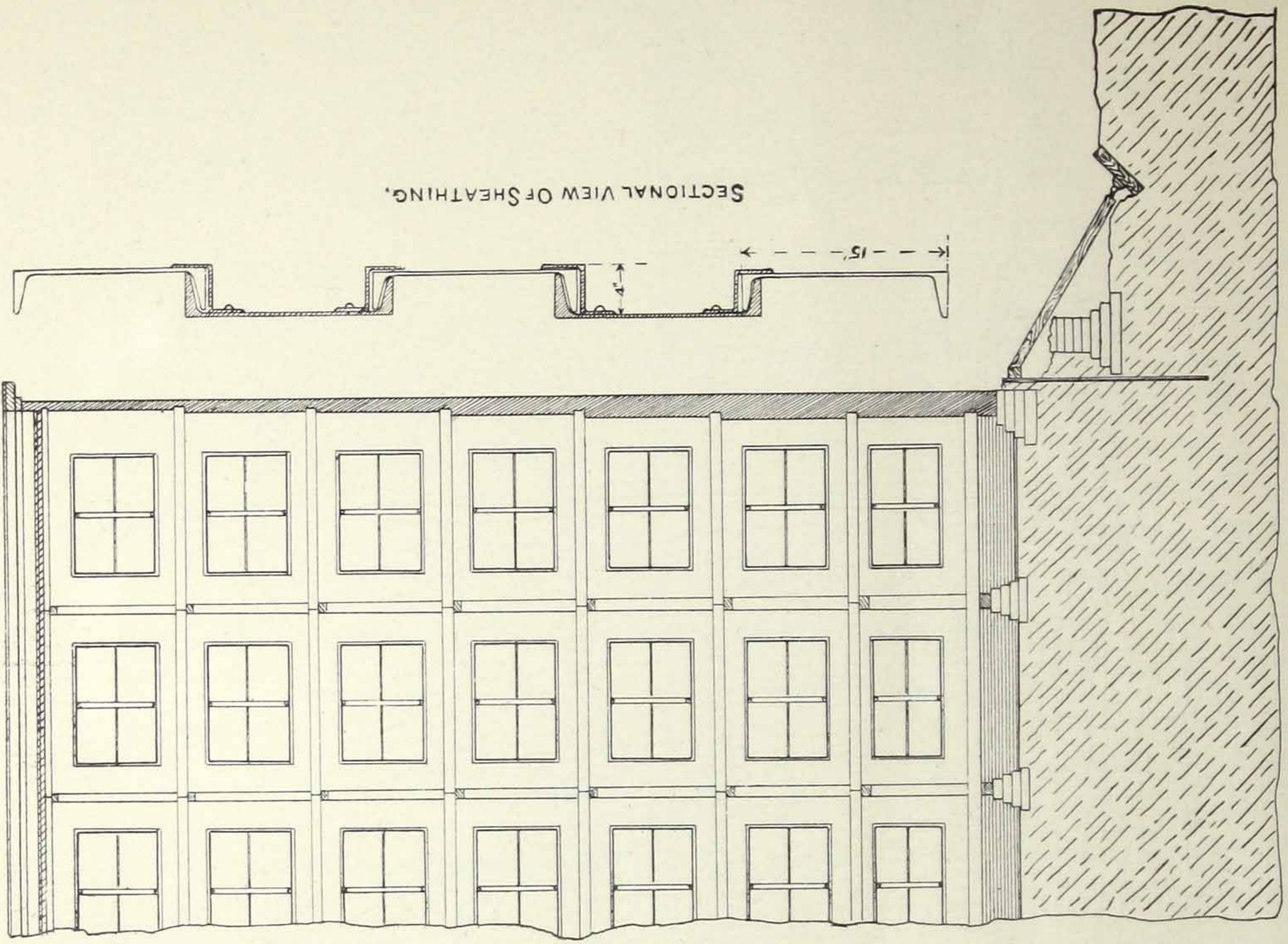
This cut illustrates method employed in driving Interlocking Sheet-steel Piling in the shaft of the Johnston City and Big Muddy Coal and Mining Co's. Mine at Johnston City, Illinois, where quicksand was encountered at the 100 foot level.



Testimonial on Page 10.



METHOD OF DRIVING STEEL PILING PARALLEL WITH HEAVY WALL FOR THE PURPOSE OF SUPPORTING SAME
AND TO ALLOW LOWERING FOOTINGS BELOW OLD FOUNDATIONS.



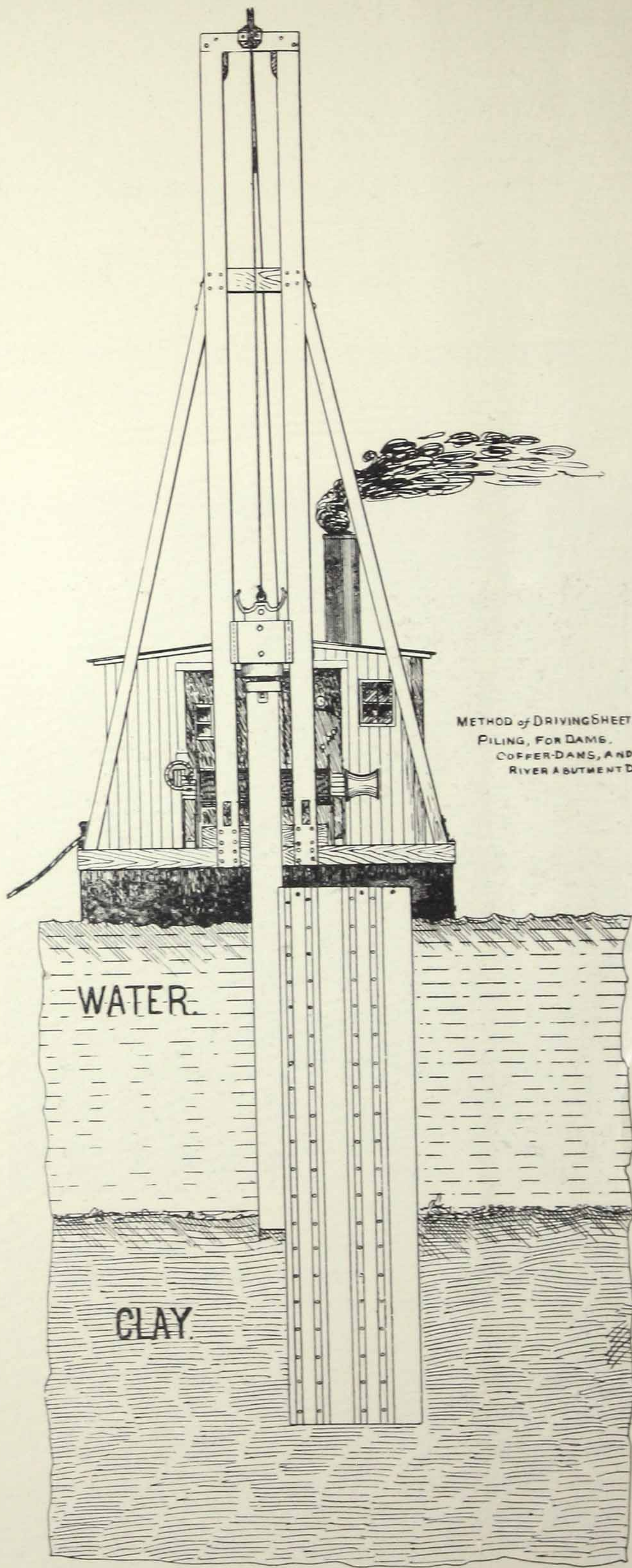
SECTIONAL VIEW OF SHEATHING.

ABOVE SECTION SHOWS EARTH EXCAVATED, DOWN TO LEVEL OF NEW FOOTING-
SHEATHING BRACED, WHILE NEW FOOTINGS ARE PUT IN PLACE
THE PILING IS THEN REMOVED, AND REDRIVEN

Above is an illustration of similar work done on the New Traction Building, Cincinnati, Ohio.



Above cut represents photographic view of work on Traction Company Building, Cincinnati, Ohio. See letter of Testimonial, Page 14.

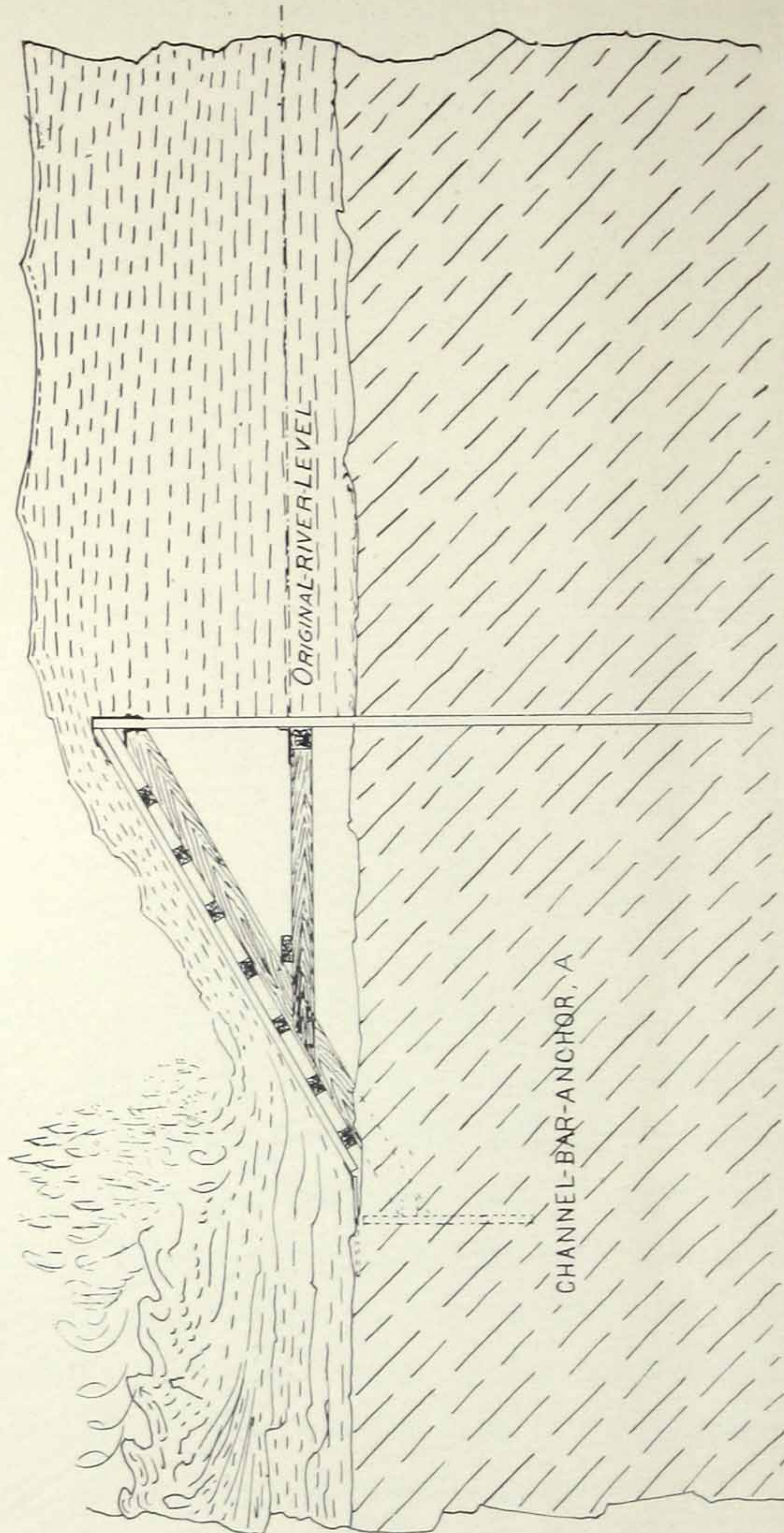


METHOD of DRIVING SHEET STEEL
PILING, FOR DAMS,
COFFER-DAMS, AND
RIVER ABUTMENT DAMS

INTERLOCKING CHANNEL BAR COMPANY 1100 TRIBUNE BLDG
CHICAGO

Page 6 is an illustration of method employed in driving the Interlocking Channel Bars, by means of the ordinary Pile Driver mounted on a barge or scow. The corner pieces are first set plumb, and then driven to the proper depth. Great care must always be taken in setting the first corner plumb, as the corner piece is a regulator for all of the following sheeting. If the corner is plumb, all the other sheeting will follow plumb. Piling can be driven, and wales bolted to the piling will form an exact guide for the sheeting while same are being driven—this is hardly necessary when corners are driven plumb. Some engineers prefer it however. This method has been used in driving the Interlocking Channel Bars for the Great Cofferdam used in constructing the foundations of the Union Electric Light & Power Company's Plant at St. Louis, Mo.

SECTIONAL VIEW OF
INTERLOCKING CHANNELBAR



CROSS SECTION OF DAM.

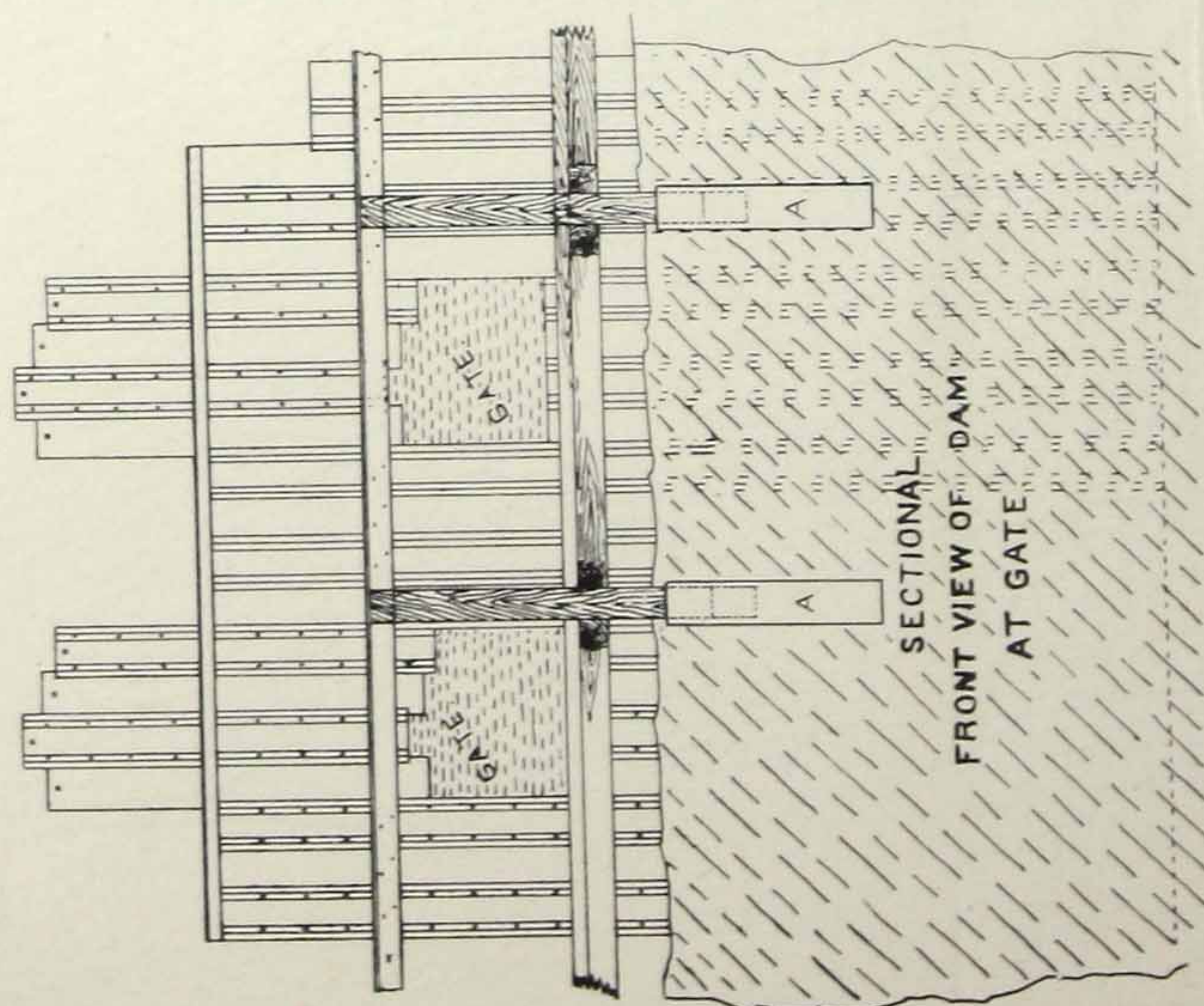
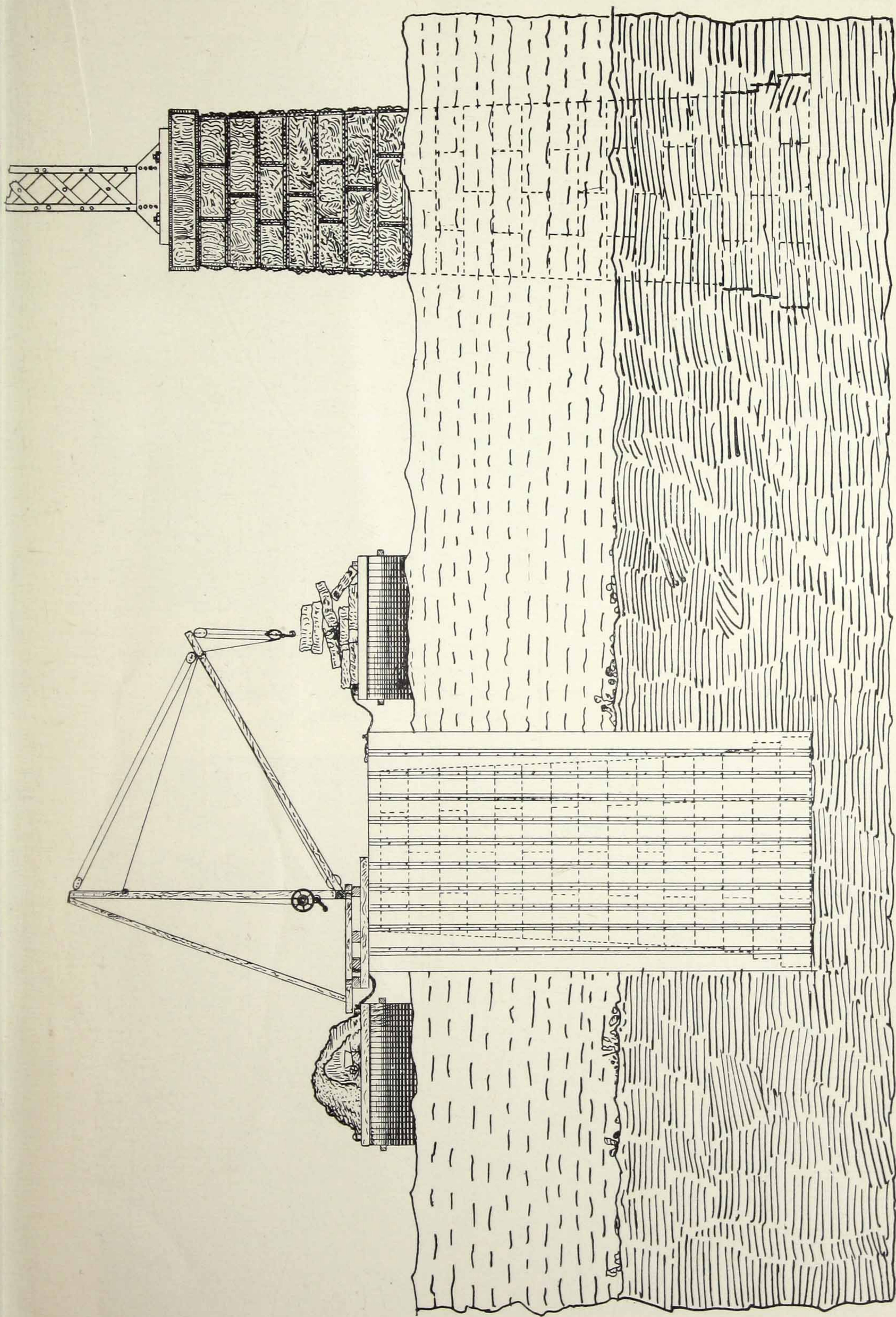


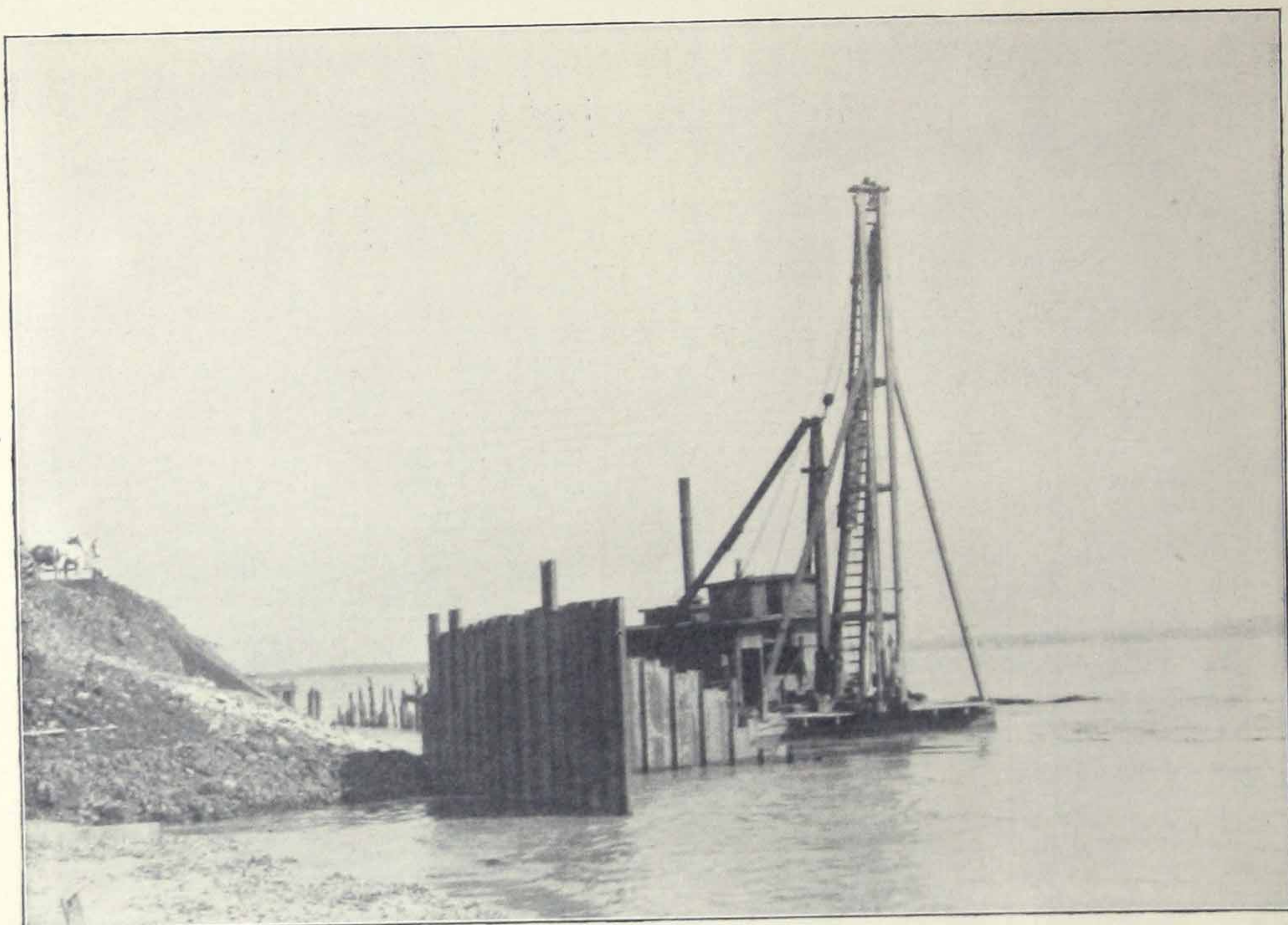
Illustration of a quick method for damming a river, for the purpose of raising the water for power or irrigating purposes. A dam built after this plan can be quickly and cheaply built, and still contain the greatest factor of strength and durability. The above cut illustrates method employed in driving the interlocking channels in soft river beds where river bottoms is composed of sand and soft shifting earth.



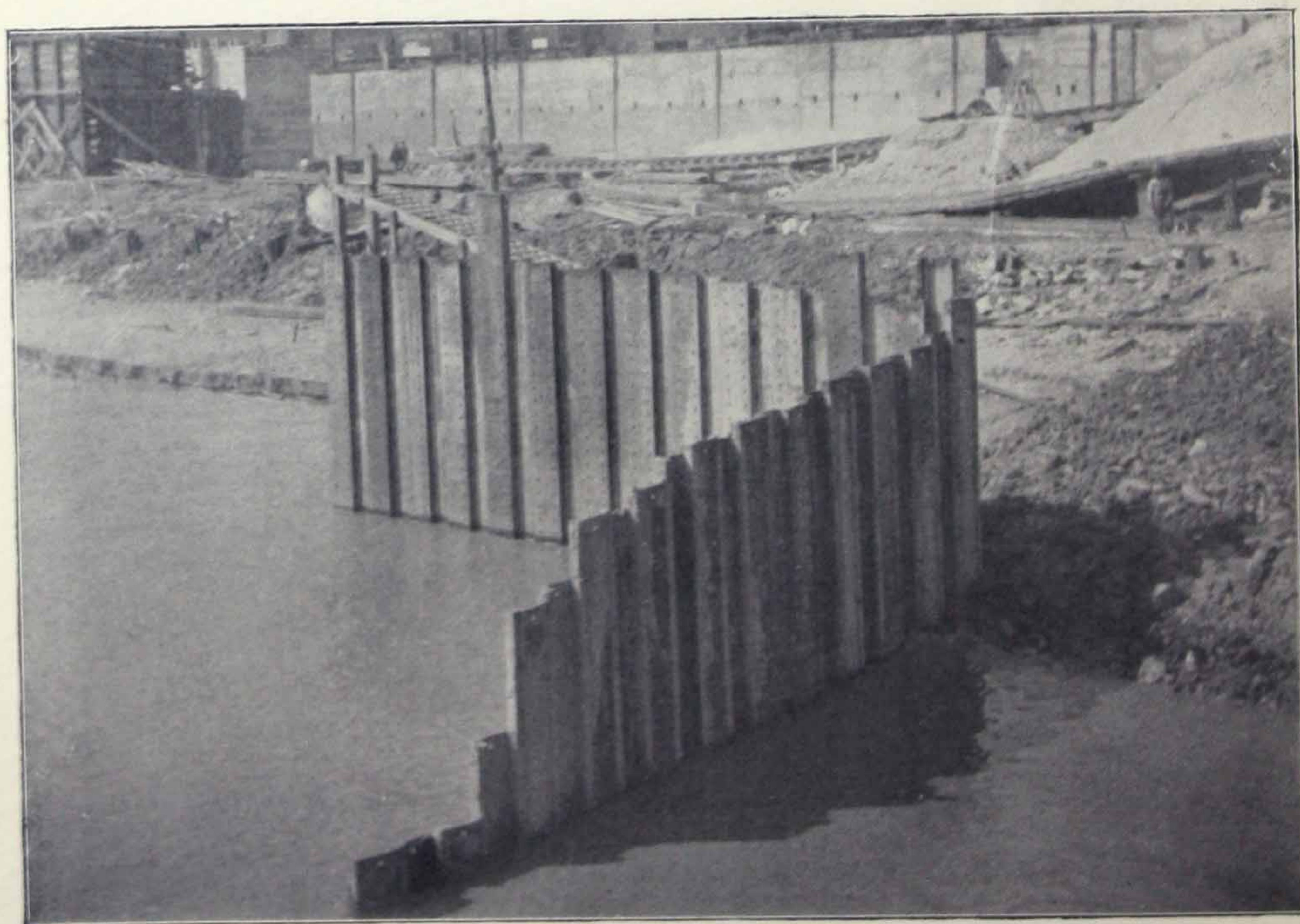
ABUTMENT IN COURSE OF CONSTRUCTION.

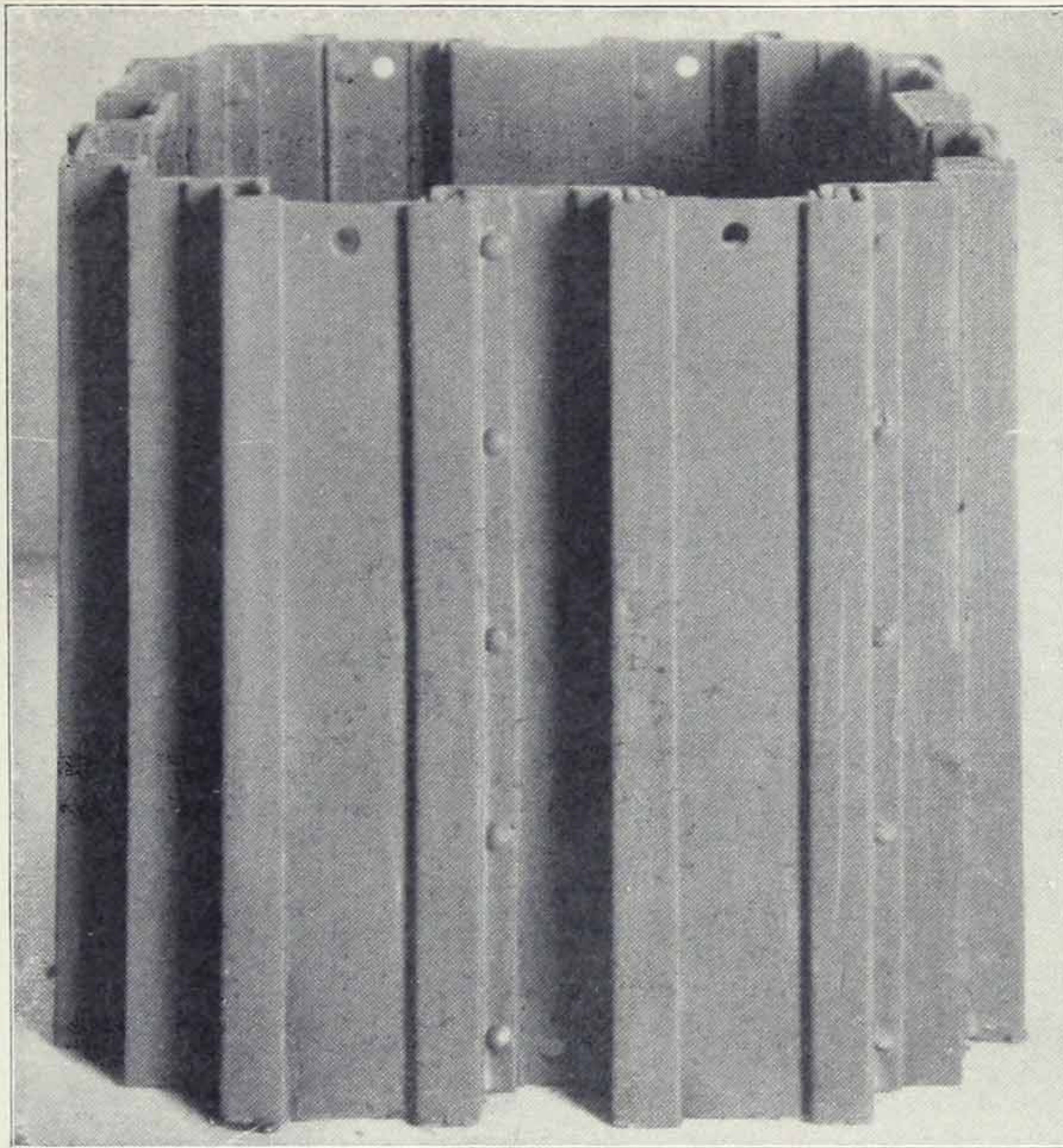
ABUTMENT COMPLETE.

Illustration of Interlocking Channel Bars in position and abutment in process of construction.

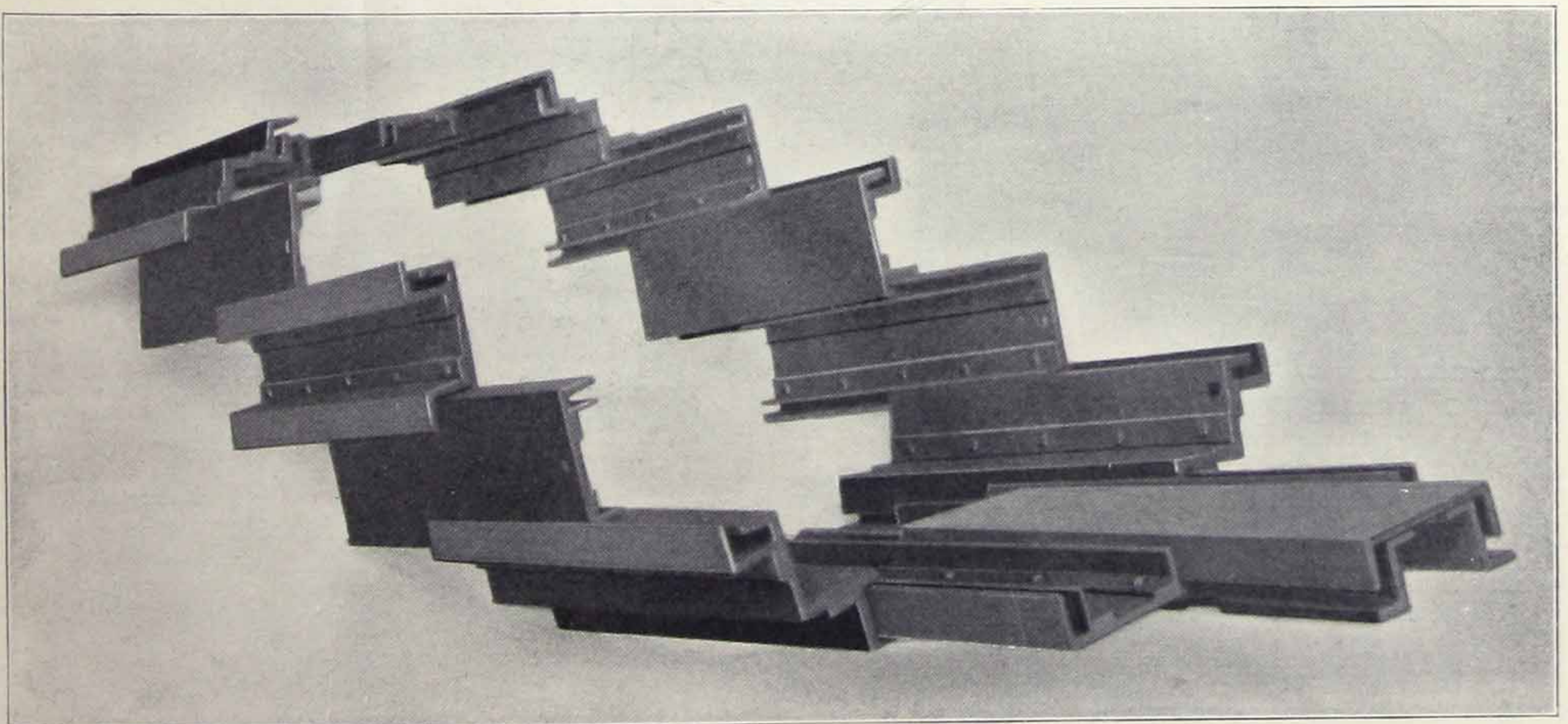


The upper and lower illustrations are from views taken from photographs of the initial driving of the great coffer-dam used in constructing the foundation of the Union Electric Light and Power Co., plant at St. Louis, Mo.

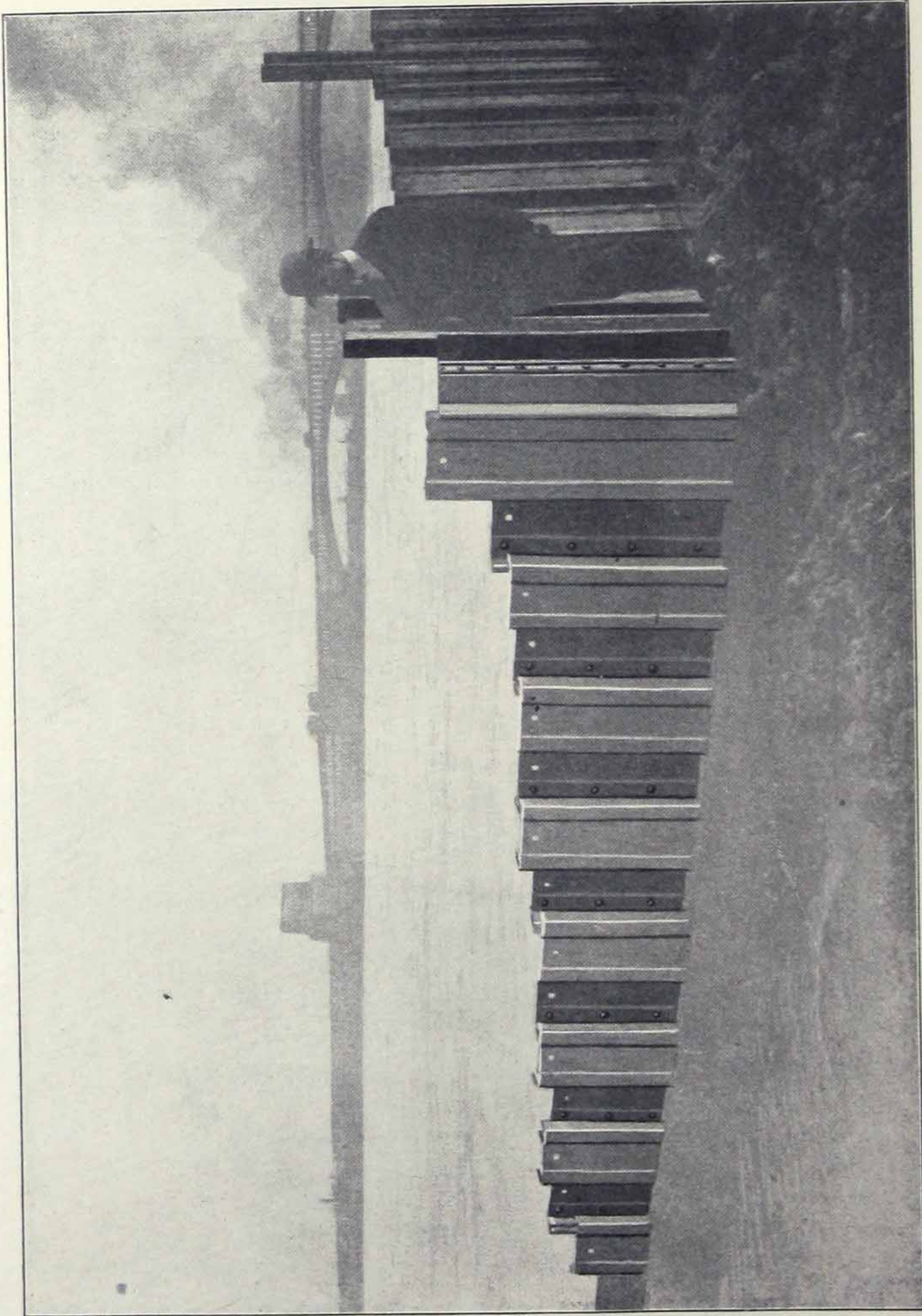





Cut No. 1 represents section of Channel Bars
for mine shaft in position.



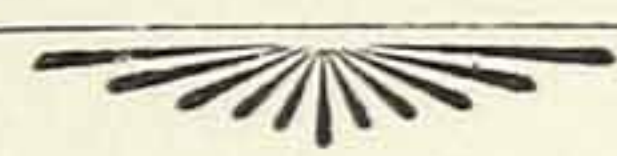
Cut No. 2 represents shield on side showing the differential
position of Channel Bars.



The above illustrates a section of the St. Louis Dam. The piling shown are 50-foot lengths and are driven to bed rock. Eads Bridge is seen in the background.



Johnston City & Big Muddy Coal and Mining Co.



Johnston City, (Lakecreek P. O.) Ill., April 28, 190²

L. P. Friestedt,
Chicago.

Dear Sir:-

Yours of the 22d to hand. Have just returned from Chicago, or would have replied sooner.

It is 65 feet to sand, 10 feet of sand, 4 feet of clay, and then 18 inches of sand, 6 inches of blue clay, and then shale. We had put in steel shoe made of 3-8 inch boiler plate, 7 feet high with 1 foot for cutting rim. We had point of shoe stuck on this 4-foot clay band, which was on an incline. Shaft was a foot out of plumb. We simply drove these channels down all around, took out the sand and put in our timber. Did not get channels driven quite far enough first time and quit taking out the dirt, and drove them down further. Had practically no trouble at all.

These are the facts of the case. Extract that portion of them you deem desirable and formulate a letter to suit your purpose, and I will sign it, which I can do with a clear conscience. You can not make it too strong, as I know of no other method by which we could have succeeded.

We are getting along first rate and expect to be down to coal in about ten days.

Very truly,

P. H. Holland

RALPH & SUMNER SOLLITT CO.

BUILDERS

1100 HARTFORD BUILDING, 140 DEARBORN, ST.

TELEPHONE CENTRAL 4148

CHICAGO Sept. 27, 1902.

Interlocking Channel Bar Co.,
1200 Tribune Bldg.,
Chicago, Ill.

Gentlemen,-

In answer to your inquiry with regard to the driving of the Interlocking Channel Bars on the Traction Building contract at Cincinnati will say; That we drove the Channel Bars parallel with the adjoining eight story building, for the purpose of retaining the embankment and walls of said building, as the restrictions were such that the owners of the said building objected to our entering their premises for the purpose of supporting the said building on jack screws.

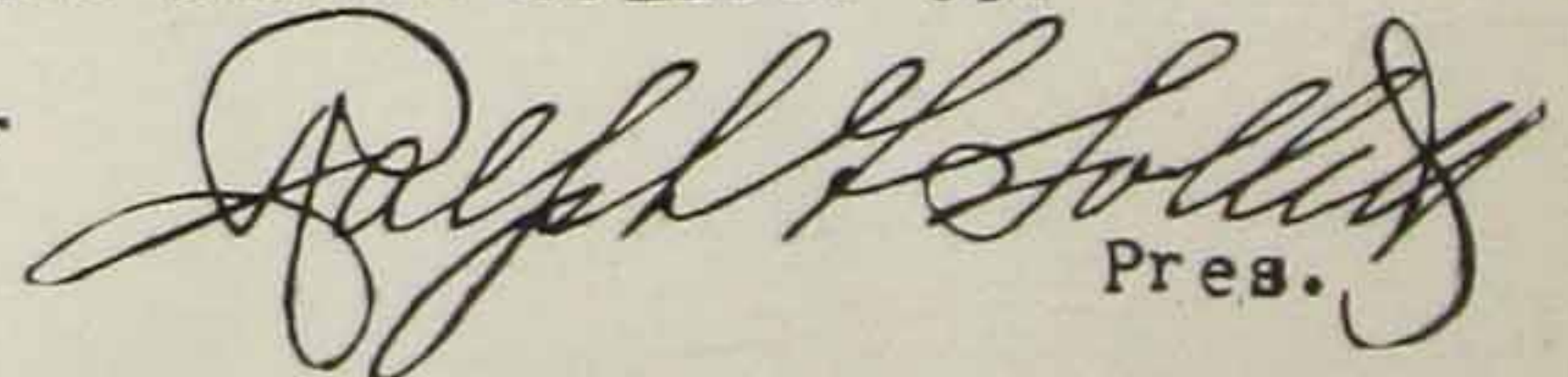
After driving the channel bars we excavated to a depth of 10 feet below the footings of the said eight story building and placed the footing of the Traction Building without in any way interfering with or damaging the adjoining building.

We pronounce the method employed an absolute success.

Yours respectfully,

RALPH AND SUMNER SOLLITT CO.

Per


Pres.

DIRECTORS:
ADOLPHUS BUSCH
SAM'L M KENNARD
WILLIAM J LEMP
JULIUS S WALSH
WILLIAM F HOLKER

OFFICERS.
PRESIDENT: JULIUS S WALSH.
VICE PRESIDENT: CHARLES W. WETMORE
GEN'L MANAGER: CHARLES M. LEDLIE.
TREASURER: BRECKINRIDGE JONES
SECRETARY: HAROLD P. G. COATES

DIRECTORS:
CHARLES W. WETMORE
GEORGE R. SHELDON
JOHN H. ORABELLE
WILLIAM F. WHITE
HAROLD P. G. COATES

UNION ELECTRIC LIGHT & POWER COMPANY

TENTH & ST. CHARLES STREETS.
ST. LOUIS.

October 1st 1902

Messrs. Brooks & Weber,
#201 Quincy Block,
Denver, Colo.

Dear Sirs;--

I have just received your favor of Sept. 28th. I cannot answer your questions regarding the Interlocking Channel Bar, better than by stating my experience with it.

At a point in the Mississippi River where the Union Electric Light & Power Company are building their power house, the natural rock which is about 20 feet below the surface slopes toward the river at an angle of about 40 degrees from the horizontal. This makes it necessary to excavate the entire length of the building (323 feet along the river and to a depth of 40 feet below the ordinary stage of the river) to get a secure footing for the foundation.

The only method which will allow rapid and continuous work was an open cofferdam, and after thoroughly considering all the different forms of dams, we found that one constructed with the interlocking channel bar was the only one which could be driven successfully, and which would when completed hold the pressure.

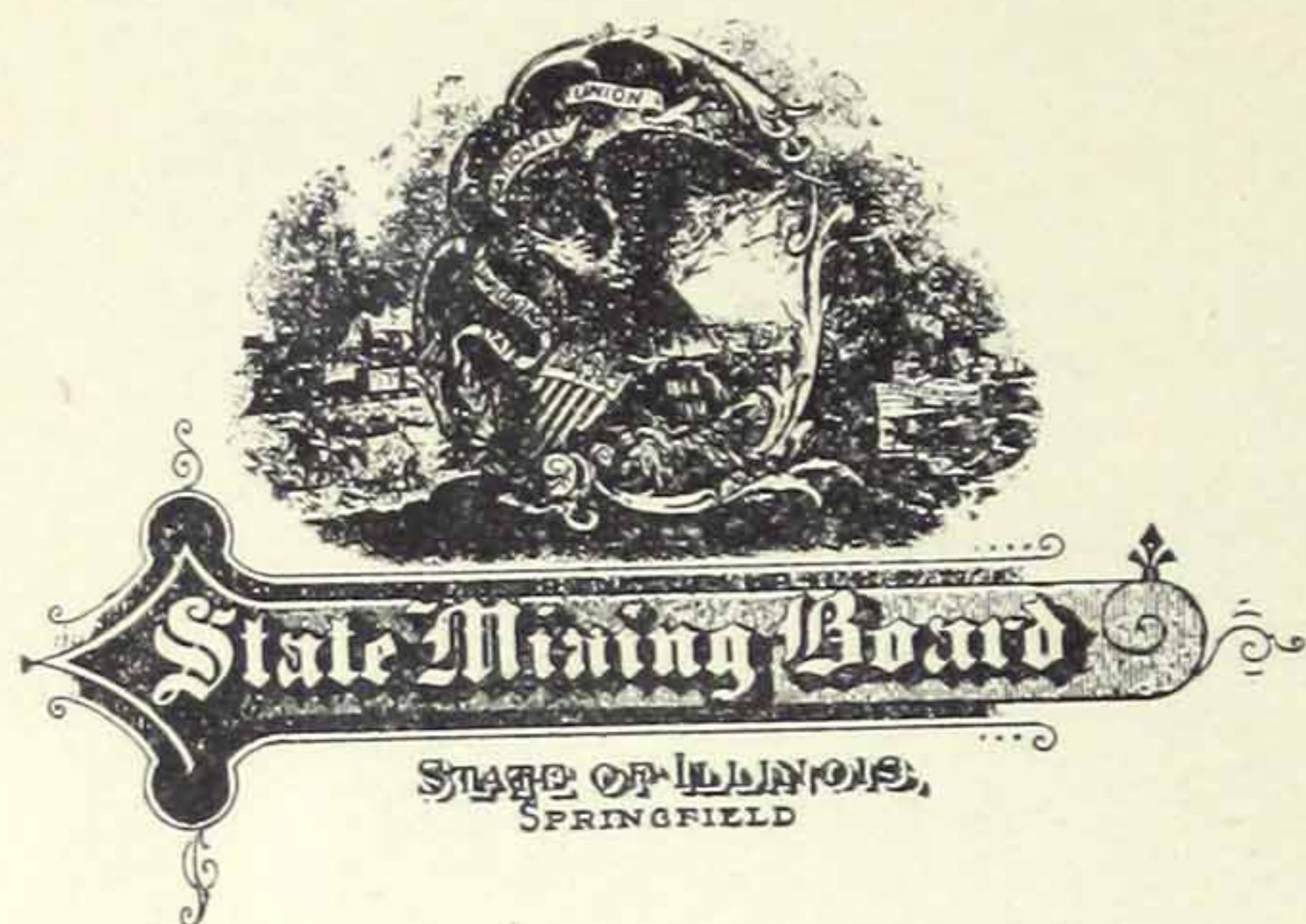
In constructing the dam which was made in sections 40 x 60 and 50 feet deep, we drove through six feet of river silt, then 10 feet of rip-rap which was dumped there is a revetment, and four feet of clay and gravel which is on top of the natural rock. When the sheating strikes the loose rock it drives slowly until the rock is forced down on a solid bed, then the blow from the hammer breaks it or pushes it aside. We use the ordinary drop hammer weighing 2400 Lbs. and in no case did we drop the hammer over eight feet. I do not believe it would have been possible to drive wooden sheating in such a place.

For sea-walls where driving is through sand it will be a success for no other sheating affords so little resistance in driving.

In some cases the first cost might be more than wooden sheating, but for deep work or places where there is great pressure, there is nothing so cheap or safe.

Very truly yours,

W. S. Ludington
Mechanical Engineer.



RICHARD NEWSAM, President, PEORIA
 WM. ATKINSON, Vice President, MURPHYSBORO
 LEE KINCAID, Treasurer, ATHENS
 HUGH MURRAY, M.E., NASHVILLE
 DANIEL REESE, DANVILLE
 EBEN HOWELLS, Secretary, SPRINGFIELD.

TO ALL WHOM IT MAY CONCERN:

This is to certify that we, the undersigned, State Mining Board and Inspectors, have examined the devise known as the Interlocking Quick Sand Shield, a devise planned and intended to eliminate the trouble heretofore experienced in the sinking of shafts through quick sand and water.

We pronounce the devise practicable and a safe method for such work, and believe that when the said shaft or shield is once in position in a mine it will reduce to a minimum the danger of caving in of mines which has heretofore existed from the pressure of quick sand and water in the surrounding earth.

<i>F. Newsam</i>	<i>Walton Rutledge State Insp 5th dist</i>
<i>Hugh Murray M.E.</i>	<i>Thomas Weeks " 4 "</i>
<i>Lee Kincaid Treas</i>	<i>H. M. Allister " 1st "</i>
<i>Daniel Reese</i>	<i>John D. Morgan " 6th "</i>
<i>Wm Atkinson</i>	<i>Evan D. John " 7th "</i>
<i>Eben Howells Secy</i>	<i>Vice Presst Geo. Stetson Co. Insp.</i>
<i>William Scarfe. Secy</i>	<i>Geo Morgan Inspector</i>
<i>Mine Managers Assn</i>	<i>Thos Hudson 2nd dist</i>
<i>Samuel Moore Sinkers & Contractors</i>	<i>James Taylor State Inspector 3rd dist</i>